

Alaska Department of Fish and Game
Division of Wildlife Conservation
September 2003

Preparation of Manuscripts on Marten Ecology in Southeast Alaska

Rodney W. Flynn

Research Performance Report
1 July 2002–30 June 2003
Federal Aid in Wildlife Restoration
Grant W-33-1, Study 7.20

This is a progress report on continuing research. Information may be refined at a later date.

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**FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
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PROJECT TITLE: Preparation of manuscripts on marten ecology in Southeast Alaska

PRINCIPAL INVESTIGATOR: Rodney W. Flynn

COOPERATORS: Merav Ben-David, University of Wyoming

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-33-1

PROJECT NR.: 7.20

WORK LOCATION: Douglas

STATE: Alaska

PERIOD: 1 July 2002 – 30 June 2003

I. PROGRESS ON PROJECT OBJECTIVES

OBJECTIVE 1: Analyze previously collected data on marten ecology.

Additional analyses on previously collected data on marten ecology were completed. Also, peer reviewers recommended new approaches and analyses.

OBJECTIVE 2: Prepare manuscript on marten habitat relationships.

Manuscript on marten denning and resting structures has been prepared and completely revised based on peer comments. New multivariate analyses were incorporated and the revised manuscript was prepared for submission to a journal. A first draft of the manuscript on marten macro-scale habitat selection was nearly completed.

OBJECTIVE 3: Prepare manuscript on factors affecting marten abundance.

Three manuscripts were in various stages of publication. More work, especially the inclusion of peer comments, will be needed on each manuscript before submission for publication.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB 1: Analyze previously collected data on marten ecology.

Additional analyses on previously collected data on marten ecology were completed. A workshop on Resource Selection Function modeling was attended in January 2003. Subsequently, I organized a workshop on Resource Selection Function modeling that was held in Juneau during April 2003. This newly learned statistical technique was applied to previously collected habitat-use data. Initially, we applied the method to micro-site habitat selection, i.e. den and resting sites. Peer reviewers recommended this multivariate approach be applied to our data before it would be accepted for publication. This new approach allows for the incorporation of continuous and discrete habitat variables in the resource selection function analysis. The habitat GIS database was manipulated to compute additional continuous habitat variables, e.g. measures of fragmentation, slope, and elevation. An analysis of these new continuous habitat variables was nearly completed. Consulted with staff biometrician on analytical procedures.

Because of the large amount of data available from a broad, long-term study, some data remained inadequately analyzed. We were dependent on a cooperator to provide new stable isotope values and a modified resource-mixing model. These data were received too late to incorporate into the planned manuscript.

The population ecology data was analyzed in reference to new management questions. A proposal was made to the Federal Subsistence Board to change the marten-trapping season for northern Chichagof Island. The results of the previous study were used to evaluate whether sex ratios can be used to predict overharvest, especially in an in-season management framework. Sex ratios in the previous catch data were analyzed to find whether certain rates could predict overharvest. In response to peer comments, a new population modeling approach for population estimation was investigated. The program "MARK" was obtained, and the mark-recapture data obtained during the previous study were evaluated.

Temporal spatial variation in the stable isotopes of potential prey items was investigated. We obtained results from some of the previously collected samples plus new data available in the literature from another study. A new resource-mixing model was used to evaluate the previously collected marten stable isotope data. New diet proportions were calculated based on the new model and prey values.

Data files were updated including marten habitat use and available habitats. Landcover and topographic GIS coverages were updated as new information became available. Worked with US Forest Service and Fish and Wildlife Service to improve the exchange of GIS information. Computer hardware and software were updated to keep pace with recent advancements, especially GIS. Multivariate approaches to data analysis were explored to better understand habitat-use relationships. New approaches for the analysis of population data were incorporated into the analyses. Because of the amount of data available and peer comments, not all appropriate analyses were completed.

JOB 2: Prepare manuscript on marten habitat relationships.

Manuscript titled *Denning and resting structures of American martens in Southeast Alaska* was returned and revised. The previously discussed multivariate analyses were incorporated and a revised manuscript was prepared for submission to a different journal. A first draft of the manuscript on marten macro-scale habitat selection was nearly completed.

Although most of the analyses were completed, manuscript on macro-scale habitat use was not completed because of time limitations.

JOB 3: Prepare manuscript on factors affecting marten abundance.

Draft manuscript titled *Marten abundance on northeast Chichagof Island, Southeast Alaska, 1991–98* was reviewed by peers and revised. Draft manuscript titled "Marten sex ratios in trapper catches – what do they tell us?" was revised. First draft of manuscript titled *Diet, body condition, and reproduction in American martens* was prepared. The cooperator rewrote the section on stable isotope analysis based on previously described analyses. We decided to expand this manuscript into a monograph targeted for Ecological Applications. None of these manuscripts were actually published as planned. More work, especially the inclusion of peer comments, will be needed on each manuscript to achieve publication.

III. ADDITIONAL FEDERAL AID FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None

IV. PUBLICATIONS

None

V. RECOMMENDATIONS FOR THIS PROJECT

This project should be continued, at least on a part-time basis, until the most important manuscripts have been completed. A substantial amount of new information has been collected from another project and should be incorporated into some of the manuscripts.

VI. APPENDIX

None

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE \$ 51,234 STATE SHARE \$ 17,078 = TOTAL \$ 68,312

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APPROVAL DATE: _____